

Decision-tree for Generalized States in Ecological Sites of MLRA 42 in southern New Mexico (DRAFT 17 April 2008)*.

I. States without a significant woody plant component (< 10% canopy cover) at potential (Bottomland, Salty Bottomland, Salt meadow, Draw, Sandy, Shallow sandy, Loamy sand, Limy, Loamy, Clayey, Salt flats, Gyp Upland)	
A. Existing plant community without a significant woody plant component	
1. <i>Site near maximum productivity (potential) with full complement of dominant historical perennial grass species[†]. Grass cover interconnected with high resource retention in average rainfall years, evidence of erosion is low. The dominant grass species varies with recent climatic conditions and land use.</i>	Grassland (1)
2. <i>Perennial grasses dominant, but cover of historically-dominant species unlikely to recover without restoration due to competition and/or soil degradation. One or more of the following: historically-dominant grass species are absent or are patchy/fragmented associated with low resource retention and moderate to high evidence of soil erosion. Grazing-tolerant or disturbance-associated species may be dominant, productivity patchy and low. Reference fire frequencies likely to be altered.</i>	Altered grassland (2)
3. <i>Perennial species absent or are isolated relict plants. Resource retention very low</i>	Bare/annuals (7)
B. Existing plant community with a significant woody plant component	
4. <i>Distribution and/or age classes of invasive woody plants suggest that they are likely to fill in the site over time. Potential, dominant perennial grass species dominant or co-dominant in cover with evenly scattered, young invasive shrubs or isolated, dense clusters of young shrubs (> 10% cover of shrubs), low resource retention and erosion may or may not be evident. Reference fire frequencies likely to be reduced.</i>	Shrub/tree-invaded (4)
5. <i>Invasive woody plants are dominant but the distribution of remnant grass in woody plant interspaces suggests that competitive exclusion is incomplete and/or soil degradation is infrequent. Woody plants are dominant cover and dominant perennial grass species restricted to discrete patches in shrub interspaces (> 10 % cover of grass, with > 1% occurring in interspaces). Resource retention is usually low and grass-fueled fires are unlikely to occur.</i>	Shrub/tree-dominated (5)
6. <i>Biological activity is centered beneath invasive woody plants, perennial grasses away from woody plants are insignificant. Dominant perennial grass species entirely absent or as isolated relict patches (< 10% cover). 95-100% of existing grass cover occurs under shrubs. Evidence of interspace erosion/soil degradation is extensive.</i>	Expansion shrubland/woodland (6)

7. <i>The distribution of exotic species suggests that they will fill in the site over time, but do not govern ecosystem function of the site.</i> Exotic species present or common (> 5% cover).	Exotic invaded (9)
8. <i>Exotic species are dominant and govern ecosystem function of site.</i>	Exotic dominated (10)
II. States having a significant woody plant component (>10%) within a grassland matrix at potential (Deep sand, Gravelly, Gravelly loam, Gravelly sand, Hills, Limestone Hills, Gyp Hills, Malpais)	
1. <i>Site near maximum productivity (potential) with full complement of dominant historical species[†].</i> Perennial grass cover dominant and cover continuous, but may be interrupted by woody plant patches. Little erosion except on steep slopes. Woody plants largely scattered within grass matrix or intermixed with grass; some high density clusters. Dominant grass species vary with recent climatic conditions and land use.	Shrub/tree savanna (3)
2. <i>Perennial grasses dominant, but historically-dominant species unlikely to recover without restoration due to competition and/or soil degradation.</i> One or more of the following: historically-dominant grass species are absent or are patchy/fragmented associated with low resource retention and moderate to high evidence of soil erosion. Grazing-tolerant or disturbance-associated species may be dominant, productivity patchy and low. Reference fire frequencies likely to be altered.	Altered savanna (11)
3. <i>Expanding woody plants are dominant but the distribution of remnant grass in woody plant interspaces suggests that competitive exclusion is incomplete and/or soil degradation is infrequent.</i> Woody plants are dominant cover and dominant perennial grass species restricted to discrete patches in shrub interspaces (> 10 % cover of grass, with > 1% occurring in interspaces). Resource retention is usually low and grass-fueled fires are unlikely to occur.	Shrub/tree-dominated (5)
4. <i>Biological activity is centered beneath expanding woody plants, perennial grasses away from woody plants are insignificant.</i> Dominant perennial grass species entirely absent or as isolated relict patches (< 10% cover). 95-100% of existing grass cover occurs under shrubs. Evidence of interspace erosion/soil degradation is extensive.	Expansion shrubland/woodland (6)
5. <i>Perennial species absent or isolated relict plants.</i> Resource retention very low	Bare/annuals (7)
6. <i>The distribution of exotic species suggests that they will fill in the site over time, but do not govern ecosystem function of site.</i> Exotic species present or common (> 5% cover).	Exotic invaded (9)
7. <i>Exotic species are dominant and govern ecosystem function of site.</i>	Exotic dominated (10)

III. States that are dominated by woody plants at potential (Deep sand SD-3, Sandhills, Salt meadow)	
1. <i>Site near maximum productivity (potential) with full complement of dominant historical species[†]</i> . Woody plants are dominant and native perennial grasses are scattered among woody plants or in isolated patches, if they are present. Resource retention is high and/or evidence of erosion is low.	Persistent shrubland/woodland (12)
2. <i>Plant communities represented in the historical range of variation in dynamic riparian systems</i> . Riparian forest associated with water courses as a component at site potential.	Gallery forest (8)
3. <i>Woody plants dominant but productivity reduced due to soil degradation or long-term demographic limitations</i> . Shrub cover is fragmented and sparse, shrub decadence may be apparent, resource retention is low and there may be evidence of accelerated erosion.	Altered shrubland/woodland (13)
3. <i>Perennial species absent or are isolated relict plants</i> . Resource retention very low	Bare/annuals (7)
4. <i>The distribution of exotic species suggests that they will fill in the site over time, but do not govern ecosystem function of site</i> . Exotic species present or common (> 5% cover).	Exotic-invaded (9)
5. <i>Exotic species are dominant and govern ecosystem function of site</i> .	Exotic-dominated (10)

*Generalized states convey the distinct classes of structure-function relationships represented in states of NRCS state-and-transition models. Where possible, state classes are linked to vegetation formations of the National Vegetation Classification system. The interpretation of a state class as 'degraded' requires identification of the reference condition, and the key has been organized to facilitate this interpretation. Nomenclature and identification of specific states within ecological sites require reference to NRCS state-and-transition models. State identity is generally assessed at the scale of large patches (1-1000 ha) within ecological site mapping units.

[†] Italicized sentence is a general concept for the state. Subsequent description and numerical values used in this document are 'rules-of-thumb' offered to facilitate use by individuals unfamiliar with Chihuahuan Desert ecosystems. Individual state-and-transition models must be examined to determine the identity of dominant historical species.